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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,430	12/08/2003	David G. Fullington	03AB237 (110003.00068)	2325

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Susan M. Donahue
Rockwell Automation, Inc., 704-P
1201 South Second Street
Milwaukee, WI 53204-2496

EXAMINER	
THOMAS, LUCY M	

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/730,430	FULLINGTON ET AL.	
	Examiner	Art Unit	
	Lucy Thomas	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/30/2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *5,16,17 and 21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-15,18-20,22 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/15/04,11/22/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of election of species I in the reply filed on 11/30/2005 is acknowledged. Regarding non-elected claims 5, 16, 17, and 21: these claims have been withdrawn as non-elected, however, will be rejoined, should generic claims 1, 2, 18, 20, and 23 be found allowable.

Claim Objections

2. Claims 7-10 are objected to because of the following informalities: Claim 7 recites the limitation "the second circuit" in lines 1 and 2 and "the first circuit" in line 3. There is insufficient antecedent basis for these limitations in the claim. Accordingly claims 8-10 are also objected to. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 7-9, 11, 15, 18-19, 20, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Schwesig (US 6,573,681). Regarding Claim 1, Schwesig discloses a drive circuit (Figures 1, 2) for delivering high-level power to a load M, the drive circuit comprising: a high power circuit (T1-T6 of W and OK1-OK6 and

RS1-RS6 of A) capable of being coupled to the load and delivering the high level power thereto; and a low power circuit (A excluding high power circuit component) that controls the high power circuit, wherein the low power circuit includes a first circuit portion ST that provides at least one control signal that is at least indirectly communicated to the high power circuit and that controls the delivering of the high level power by the high power circuit; and a second circuit portion (see S1, S2, SH1, SH2 portion of A) coupled to the first circuit portion, wherein the second circuit portion is capable of disabling the first circuit portion so that the at least one control signal avoids taking on values that would result in the high power circuit delivering the high level power to the load (see different circuit portion of A in Figures 1, 2, Column 1, lines 7-11, Column 3, lines 49-67, Column 5, lines 6-11).

Regarding Claim 2, Schwesig discloses the drive circuit, further comprising a third circuit portion (see N1, N2, L1-L4 portion of A) that also is coupled to the first circuit portion, wherein the third circuit portion also is capable of disabling the first circuit portion so that the at least one control signal avoids taking on values that would result in the high power circuit delivering the high level power to the load (Column 2, lines 44-52). Regarding Claim 3, Schwesig discloses the drive circuit, wherein the second circuit portion includes a safety relay circuit (see SH1, SH2) that is coupled to a power terminal of the first circuit portion, and wherein the safety relay circuit decouples the power terminal of the first circuit from a power supply in order to disable the first circuit portion (Column 4, lines 35-44).

Regarding Claim 7, Schwesig discloses the drive circuit, wherein the second circuit portion includes a component that is coupled to an override port of the first circuit, and wherein the second circuit portion disables the first circuit by providing a first signal to the override port of the first circuit (see SV1_Diag and SV2_Diag in Figures 1 and 2, Note: Examiner assumes that the Applicant meant second circuit portion and third circuit portion rather second circuit and third circuit). Regarding Claim 8, Schwesig discloses the drive circuit, wherein the second circuit includes a hardware switch S1, S2 that is capable of being switched between first and second states, and wherein when the switch is switched in the first state, the second circuit provides the first signal to the override port of the first circuit (Column 4, lines 23-35). Regarding Claim 9, Schwesig discloses the second circuit except the reference does not show a NOR gate as recited. It is known in the art that an art recognized equivalent circuit can be provided which alternatively provides a NOR gate.

Regarding Claim 11, Schwesig discloses the drive circuit, wherein the first circuit includes a microprocessor (components of I1 or I2), an inverter circuit N1, N2, and a buffer circuit L1-L4 (Column 3, lines 58-63, Column 5, lines 12-29).

Regarding Claim 15, Schwesig discloses the drive circuit, wherein the high power circuit includes a plurality of high power transistor devices T1-T6 that are light-actuated and a plurality of photodiodes (see photodiodes in OK1-OK6) receive the at least one control signal from the lower power circuit, and wherein the high power transistor devices are electrically isolated from the photodiodes (Column 3, lines 52-55, 66-67).

Claim 18 recites the elements of Claims 1-2, except that a high power drive circuit is claimed instead of a drive circuit and the high power circuit, low power circuit – first circuit portion and second circuit portion are recited as a first means, a second means and a third means. Regarding Claim 19, Schwesig discloses the high power drive circuit, wherein the third means includes at least first and second inputs (see SV for S1 and S2) that can be independently switched to cause the third means to disable the second means.

Regarding method Claims 20 and 22, the recited steps would necessarily be performed when using the drive circuit disclosed in Claims 1-3. Therefore, please see the rejection for Clams 1-3. Claim 23 basically recites the elements of Claim 1, except for the recitation of the first circuit adapted to be coupled to a second circuit, instead of a second circuit coupled to the first circuit.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 4, 6, and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwesig (US 6,573,681) in view of Rowlette (US 5,806,440). Claim 4 differs from Claim 3 only in that the safety relay circuit is coupled to a pull-up resistor of the first circuit portion instead of power terminal of the first circuit. Schwesig does not disclose a pull-up resistor of the first circuit. Rowlette discloses a pull-up resistor R23

(Figure 2c) coupled to the safety relay K4 (Column 6, lines 55-65). It would have been obvious to those skilled in the art at the time the invention was made to include a pull-up resistor as taught by Rowlette, because pull-up resistors are used in the art to provide a default logic HIGH for additional safety of the circuitry. Regarding Claim 6, Rowlette discloses the safety relay circuit with normally-open contact, and normally-closed contact, wherein the contacts are physically coupled (see relays K1, K2 in Figure 2c, Column 9, lines 30-35). Rowlette's relay is used in a heating device (furnace), but would necessarily perform the recited function of Claim 6, when configured as above.

Regarding Claim 13, Schwesig discloses an inverter circuit coupled to the buffer circuit (see N1, V1 and N2, V2 in Figures 1, 2). The remaining part of Claim 13 recites the configuration including the pull-up resistor and safety relay recited in Claim 4, and the inverter. Claim 14 adds the limitation of an additional pull-up resistor in the configuration recited in Claim 13, further including the third circuit portion. It would be obvious to provide an additional pull-up resistor that is coupled to the third circuit, because the pull-up resistor can act as a load and keep the output at logic HIGH for additional safety of the circuit.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schwesig (US 6,573,681) in view of Sato (US 6,775,115). Regarding Claim 10, Schwesig does not disclose at least one coil that outputs a signal indicative of a current delivered by the high power circuit to the load, and wherein a determination is made regarding whether the signal indicative of the current is proper when the switch is switched in the first state. Sato discloses drive circuit for a motor 16 (Figures 1 and 6),

wherein a high power circuit 14 includes at least one coil 24a-c, that outputs a signal indicative of a current delivered by the high power circuit to the load, and wherein a determination is made regarding whether the signal indicative of the current is proper when the switch is switched in the first state (Column 5, lines 28-54, Column 6, lines 63-65). It would have been obvious to those skilled in the art at the time the invention was made to modify Schwesig's drive circuit to include a coil as a current sensor as taught by Sato for additional safety of the motor.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schwesig (US 6,573,681) in view of Wilson (US 5,764,024). Regarding Claim 12, Schwesig discloses the drive circuit, wherein when the first circuit is not disabled, the microprocessor outputs a plurality of preliminary signals to the inverter circuit, the inverter circuit converts the plurality of preliminary signals into a plurality of modified signals, and the buffer circuit provides the at least one control signal in response to the plurality of modified signals. Schwesig does not disclose that each of the preliminary signals, the modified signals, and the at least one control signal is a pulse width modulated (PWM) signal. Wilson discloses a plurality of signals G1, G2 which is pulse width modulated signal in a motor drive circuit 100 for a three phase motor U (Figure 3). It would have been obvious to those skilled in the art at the time the invention was made to modify Schwesig's circuit to provide pulse width modulated signal as taught by Wilson, because pulse width modulation is used to control the speed and operation of the motor by modulating the pulse width of the signals.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy Thomas whose telephone number is 571-272-6002. The examiner can normally be reached on Monday - Friday 8:00 AM - 4:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LT

PHUONG T. VU
PRIMARY EXAMINER